Chapter 9

Attribution Modeling in Online Advertising

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ABSTRACT

In correspondence with the increased use of the information and communication technology, companies have adopted various measures of online advertising and have continuously increased the online advertising spending. The technology enables companies to monitor and steer their advertising activities and generally allows to register all (online) touchpoints of a prospect with a company, the so-called customer journey. As one prospect may have multiple contacts with a brand, advertisers have to analyze how different touchpoints contribute to the advertising success. Advertisers may use a variety of heuristic and analytic attribution models. This chapter presents and discusses the most relevant attribution models – heuristic and analytic variants. Heuristic attribution models are simple rule-based approaches, whereas analytic attribution models infer the impact of different marketing channels across customer journeys and calculate the probability of a successful customer journey. Then, some business implications and potential pitfalls of attribution models are discussed.

INTRODUCTION

In accordance with the multi-media approach of individuals, brands employ a range of marketing instruments, including online instruments such as display advertising, affiliate marketing, e-mail marketing, search engine advertising, and social media (Li & Kannan, 2014). These online and offline instruments, also referred to as marketing channels (Anderl et al., 2016a), are generally used in parallel (e.g., Dinner

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et al., 2014; Naik & Peters, 2009). Research has consequently analyzed the parallel use of for example print and search engine advertising (Olbrich & Schultz, 2014), television and search engine advertising (Joo et al., 2016), display and search engine advertising (Kireyev et al., 2016), and multiple online instruments (Anderl et al., 2016a, 2016b; de Haan et al., 2016; Li & Kannan, 2014). Customers interact with brands through multiple touchpoints across various channels and media. Before buying online, for example, customers come into contact with a brand several times. These previous contacts through the same or different channels may affect the outcome of the customer interaction with a brand (Anderl et al., 2016a; Li & Kannan, 2014). The series of such touchpoints constitutes the so-called customer journey (Lemon & Verhoef, 2016).

The increasing number of marketing instruments used challenges advertisers to determine the impact of a single instrument and plan its future use accordingly. Advertisers are interested in knowing what instrument contributes in which way and to what extent towards a certain advertising target. The capabilities of online media provide corresponding (tracking) data about online consumer behavior (Anderl et al., 2016a, 2016b). Advertisers thus are able to capture (at least) the individual online customer journeys. In doing so, online advertising analysis is based upon the individual user level (Järvinen & Karjaluoto, 2015), whereas traditional performance analysis is generally done at an aggregate level. Besides identifying the series of customer touchpoints that contribute in some manner to the defined outcome, advertisers then have to assign a value to each touchpoint. This process is generally referred to as attribution (IAB, 2016).

Attribution models provide a framework for allocating contribution values across multiple touchpoints in a customer journey. Consequently, attribution modeling may affect the evaluation of the marketing channel used. Attribution models enable to understand customer behavior and interactions between marketing channels, improve budgeting, as well as providing accountability for marketing. In general, attribution models assume that neither the first nor the last touchpoint are exclusively responsible for the outcome of a customer journey (Greve, 2016) – touchpoints in between can also play a decisive role. Attribution models can basically be divided into heuristic (static) and analytical (dynamic, customized, multivariate, probabilistic, or algorithmic) attribution models (Anderl et al., 2016a; Greve, 2016). Heuristic attribution models are simple rule-based approaches to determine the impact of different marketing channels across the touchpoints of a customer journey. First touch, last touch, linear (equally weighted), time decay, and u-shaped (position based) attribution are examples of heuristic attribution models. Analytical attribution models refer to data-driven models based on multivariate analytics, such as logistic regression, time series analysis, and Markov chains. Based on a survey of 88 marketing managers, 54% exclusively use heuristic attribution models, whereas 40% of the
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